

SMARTPHONE APPLICATIONS AS A MEDIA, IN THE CHANGE OF HEALTH BEHAVIOR (DIET / PHYSICAL ACTIVITY SETUP): LITERATURE REVIEW

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ABSTRACT

Health promotion applications that are able to change health behaviors can be used as nursing interventions. The purpose of the study was to see, how the media through Smartphone applications can solve problems associated with overweight / obesity and physical activity in children. The Strategic Found method, that was done comprehensively was search of research articles in database of research journal, internet. The method used is literature review is based on the search, found 15 journals related to the application in the changes in health behavior (obesity / obesity and physical activity). Get found four main parts of this application that has good benefits in the purpose of weight loss and has fairly good quality applications. It is necessary to evaluate existing applications, paid and free applications have the same benefits, the interest of the community towards the application is high enough and Smartphone application development for health behavior change continues and needs to be improved. Available applications that are associated with changes in health behaviors in overweight or obesity and physical activity are excellent media use because, they have the benefit to achieve weight loss and increased physical activity.

KEYWORDS: Application, Smartphone, Behavior, Health, Media, Diet & Physical Activity

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INTRODUCTION

Wong (2008) is a group of children aged 6-12 years. In the current school-aged period children fight each other and clap their hands with their parents, peers, and others. In school-age children it is important to provide education about health, because in school-age children academic success begins with his health (Rossman, Dood, & Squires, 2012). Total number of school-age children in Indonesia by health profile (2015) is 37,302,551 students with specificity at elementary school age (7-12 years) are 7,430,608 students (Health Ministry of Indonesia, 2016).

Based on the psychology of school age children, Stanhope & Lancaster (2016) describes that, the growth of his soul is relatively stable, strong memory, hold all the instructions of his teacher, easy to memorize also easy, stubborn nature began to decrease and more acceptable understanding. In general, health is a broad thing related to lifestyle arrangement. School age children need to be given an understanding of health issues and its regulation of the threat of illness and injury (Kim, 2010).

Health problems in children in the world and Indonesia do look the number of events. According to WHO (2014), obesity rates in children throughout the country continue to increase, especially in developed countries, including Indonesia (WHO, 2016). Based on research conducted by Sartika (2011), in one region in Indonesia, the prevalence of 5-15 year olds for obesity is 8.3% and 7.4% are overweight. Above-average physical rate in West

Kalimantan 20% (5-12 years) Physical activity is closely related to one of the consequences of poor health problems, it is important to seek behavioral change in physical activity, in overcoming obesity or overweight (Health Ministry of Indonesia, 2013).

The problem of obesity in children, can be done with a variety of nursing orders, one of the interventions that can be done is to use information systems through the media application Smartphone / mobile phone. Nursing information is a small thing derived from the informed word on the area related to science related to information about nursing (Behrman, 2013).

Currently nursing information via computer that can be used through Smartphone / mobile is not a foreign thing anymore, the use of Smartphone / mobile phone is used one of them as a medium to provide nursing intervention that is on health education that will affect health behavior. In general health is a broad thing related to lifestyle arrangement. School age children needs to be given an understanding of their health problems and regulate and protect them from disease threats and injuries to health problems can be given intervention one of them is to do education about health lifestyle practice, considering at this time the child tends to be easier to remember and according to. The use of attractive methods according to age is expected to help in health education; one of the media that can be done is with the Smartphone application media that currently can make it easier to be a guide for parents (Gilbert, 2011).

The purpose of this study is to know the research articles that explain the application via Smartphone or mobile phone that became the media to be able to change the behavior of children's health in overcoming obesity problems or excess weight and physical activity.

Certainly this literature review will be very meaningful if the results obtained from the application role to the changes in health behavior especially in cases of obesity or overweight and physical activity, so this will be used wisely for parents in helping children in conducting or running the main program or additional and become a new idea in making the application more suitable for use in Indonesia.

METHODS

The search strategy is comprehensive, i.e. searching research articles in the database of research journals, internet. The method used is literature review. In the literature review, this time using a database of online journals that can be accessed in full. The data has been obtained presented in the form of description of each article content obtained. In this search is done by using keywords, based on what you want ditemukan the application, Smartphone or hand phone, physical activity, obesity, overweight and health behavior. The search is done with an AND "between" both "app and obesity / overweight" and "physical apps and activities".

RESULTS

Based on the results of the search engine data base journal then obtained the total articles from the six journals conducted search then obtained amounted to 15 articles. In this article it is found that the overall impact of applications that focus on either obesity / overweight or physical activity alone and or both explains the good effects of helping to change health behaviors that lead to an increase in the degree or health status of the users.

In all the articles obtained are described in several main points, among others, the effectiveness and effectiveness of the application of health behavior changes in both cases of obesity or overweight and physical activity, it need to

evaluate the applications in circulation, pay and free applications, application and Smartphone application development for health behavior change.

Benefits of Application Effectiveness and Quality

In a study conducted by Carter et al (2013) in his article entitled Adherence to a Smartphone Application for Weight Loss Compared to Websites and Paper Diaries: The Pilot Randomized Controlled Trial explains from his research that My meal mate is one application that can regulate final goals, monitor self-diet and self-activities, and there is a weekly reply message sent as a group of daily interventions and diaries. The comparison group received the same treatment as the intervention group but in different ways in its media delivery through applications, websites and diaries. In the intervention group, statistically higher values were compared in comparison with control group and obtained $P < 0.001$. In the Smartphone application we found a weight reduction of 4.6 kg (95% CI -6.2 to -3.0) whereas in the diary group decreased by 2.9 Kg (95% CI -4.7 to -1.1) as well as a decrease in the group website as much as 0.5 Kg (95% CI 0.9 to 0.0), where both groups performed for 6 months. In the body fat mass of the Smartphone group -1.3% (95% CI -1.7 to -0.8), in the diary group -0.9% (95% CI -1.5 to -0.4) and in the website group -0.5% (95% CI -0.9 to 0.0) and in this study the group by using MMM Smartphone applications can be accepted and visible in interventions lowering

The same thing also delivered by Stephen & Allen (2014) who explained in the analysis found that the frequency of results seen changes using Smartphone applications is a change in body weight, more than half of the existing research (71%) reportedly resulted significantly statistically about weight loss, physical activity, diet in food intake, decreased BMI, decreased waist circumference, average income of sugar content and satisfaction or acceptance of the final result. Surely this has the effect of having benefits through applications and sms to reduce inactivity and overweight or obesity.

Similar applications were investigated by Kikunaga et al (2007), which describes the application of weight loss Wellnavi with ordinary recording using the camera found that, in the results there is a significant relationship (0.32-0.75) between the measurement of nutrition intake from wellnavi and weight with the method recorded, on all subjects except for some nutrients such as iron, magnesium and vitamin E. Similar results were obtained between both male and female groups. It was found that the wellnavi app is better than regular recording.

Through application in weight loss was also investigated by Mateo et al (2015) which explained the results of 12 articles on systematic review and meta-analysis. It compares between apps with promotional methods without apps. It was found that applications for weight loss have significant values for weight change and BMI (kg / m²) -1.04 kg (95% CI -1.75 to -0.34; I² = 41%) and -0.43 kg / m² (95% CI -0.74 to -0.13; I² = 50%), successively between BB and BMI. Although an insignificant difference in physical activity was observed between two groups (standard deviation mean 0.40, 95% CI -0.07 to 0.87, I² = 93%). It was found that there was a very strong sensitivity in the analysis. Without visible bias. So based on this research shows that the intervention through mobile phone applications is also useful in losing weight

Efficacy of interventions that use apps to improve diet, physical activity and sedentary behavior: a systematic review by Schoeppe et al (2016) explains that, Systematic review yag done in depth through two reviewers and see changes in health behavior and relationship health outcomes, such as fit nay body, weight, blood pressure, glucose, cholesterol, and quality of life can be done using the application.

Technology through mobile phones becomes cheaper and more powerful, and can also benefit from mobile phones to convey health care information and personal health promotion and growth in mobile users from all segments of

the society, where everyone is trying to take advantage of the use of their hand phones (Patrick, Griswold, Raab, &Intille, 2008).

The quality of the application continues to be a thing to be seen, in order not to be a big disadvantage to its users, the overall application is good enough it is proved to be explained again in an article from Schoeppe et al (2017), that explains the application to improve diet, physical activity and behavioral habits in children and adolescents in value in terms of quality, availability features and techniques in behavior change so that, the results obtained using the rating scale mobile apps then the overall quality of the medium or good enough applications, the function has the highest value in the domain (mean, 4.1 SD; 0.6) followed by aesthetics (mean: 3.8, SD; 0.8) and lower scores for attachment (mean: 3.6, SD: 0.7) and quality information (mean: 2.8, SD; 0.8). The app quality rating is positively correlated with the number of application technical features ($\rho = 0.42$, $p < 0.005$) and BCTs included ($\rho = 0.54$, $p < 0.01$). Popular commercial applications improve dietary patterns, physical activity and behavioral habits in children and adolescents as a whole occupies a moderate or good quality.

Evaluation and Guidance on Outstanding Applications

In using the application to make changes in health behavior there are also applications that are only as a medium of inclusion or additional from or and intervention by professional health professionals, but certainly this application becomes a companion or additional that cannot be ignored as research conducted by Gan & Allman- Farinelli (2011) who explained that, the success of patients using the application assisted with the guidance of health professionals, who accompany the users of the application, so as to produce in accordance with the outcome to be achieved.

Applications can also serve as a companion medium that can be given to patients in controlling or monitoring their health, especially in running programs such as diet or control of fissile activities that require monitoring the health behaviors performed by patients, it is certainly very useful application usefulness as described by Mosa et al (2012) The health services are increasingly concerned in the use of Smartphone as a medium, the Smartphone becomes a very useful tool against practice based on health research and also has an important role in health education, disease self management, and monitoring patients from a distance far. So, it is very helpful with the existing application of Smartphone owned by the patient, health professionals can continue to see the progress and progress of intervening given by it.

In the era of advanced technology and evidence based practice of the success of applications in making changes in health behavior, of course, the more prevalent also the emergence of existing applications, so this raises there are various parties who are not responsible for launching applications in changing health behavior is not true in the information, this is also described in the article by Jeon et al (2014), who evaluated the application of obesity management in the Smartphone so that, the results obtained from applications about obesity management obtained the assessment and there are 70.95% of applications that provide information about controlling obesity, as many as 34, 62% provides information on exercise management. More than half of the total application is free of charge (58.78%) rating of this application 3.68 from the maximum value 5. Quality of information provided from this application 4.55 of 9 with specifications 1.79 of 3 based on authorship, 0.22 of 2 for its origin, 1.29 of 2 for its openness, and 1.25 of 2 of its upgrades. Existing applications should be evaluated by experts to avoid misinformation. From this research, it is found that the quality of existing applications have met many standards and are in good enough quality, but in the future there should be evaluations in the application that appeared or emerging from health professionals / nurses.

Commercial and Non-Commercial Applications

Smartphones in the features of the availability of various applications that have two major parts commercial and non-commercial are paid and free, it is certainly an option for users in choosing, which applications they want paid or free on the application of health behavior changes, especially on the diet for excess weight or overweight and obesity. There are several articles that have reviewed how both these things are paid or free have the same availability of the number of applications. This is explained by a study conducted by Middelweerd et al (2014), in which the study explains that, the application of physical activity promotion used an average of 5 of 23 in behavioral change techniques. This amount is no different than a paid and free app or between app store apps and playstores.

But with certain goals sometimes paid apps provide more complete and more effective things like research articles described by Direito et al (2014), where behavior change techniques vary between the paid or free type of application. Behavioral change techniques are associated with an increase in effective interventions that are generally more frequent in paid applications. This is certainly re-adjusted to the goals the patient seeks to achieve.

People's Interest in the Application

With the emergence of existing applications turned out to be a warm welcome in the middle of the community, especially for school-age children, this is as obtained from various studies that exist between the research of Dennison et al (2013) states that health in adolescent school interested in the application, where this application that brings support for health behavior change. Accuracy, legitimacy, security, effort, and strong enough effect are important in the provision of applications. The ability to record a history of behavior, the ultimate goal and the ability to get advice and information is highly valuable from an app, so this becomes a separate attraction for children to use. Other research in the process of child-study also found that the method of using gadgets with technology, as an example of the application of digital personal assistant, or a disposable camera, is preferable to the ordinary recorder and through magazine paper or food posters (Boushey et al., 2009).

Application Development

Application development continues to be carried out in the light of many risk that have proven that, positive impacts are derived from existing applications, and of course the provision of good and appropriate applications is expected in the final goal of changing better public health behavior, as described in an article by Hebden et al (2014) under the title Development of Smartphone Applications for Nutrition and Physical Activity Behavior Change where it was described that Four applications taken during 18 months for development, involving areas of marketing, nutrition and diet, physical activity, and information technology. 10 subjects are provided in the form of qualitative feedback on the use of the application. Slow process speed on the application identified in major issues. The Smartphone app is also an innovative and medium-value thing to deliver individuals in intervening to change health behavior, but researchers should give consideration to population targets, technological willingness, availability of commercial applications, and the possibility that they use applications for continuous or continuous. So this consideration becomes a consideration in the process of making future applications

CONCLUSIONS AND RECOMMENDATIONS

Application is a technology presented today by various Smartphone that have become commonplace to have,

through an application can convey a destination in accordance with the wishes of the provider and the user can choose it. One type of application that is the media is in the health behavior change that is specifically in terms of handling obesity or overweight in children, this application there are various brands provided and of course have different serving features but have the same goal in terms of weight loss and increased physical activity.

Various applications obtained in this study have the benefits and impact of good and effective for changes in health behavior both in the BB decrease or increased physical activity. The average quality has a good enough quality, but this application needs to be evaluated so that the truth of information submitted is not deviant, and this application can be used as main or additional media. Considerations in paid and unpaid apps are re-adjusted to the needs but on average all these apps have the same effectiveness either paid or free. Making this application needs to be constantly developed to be a feature of a Smartphone as well as a media that can be relied on weight gain and increased physical activity in children.

Subsequent research should make the application of health behavior changes in weight loss and increased physical activity in children is more communicative, interactive and there is a cultural approach from the habits of public health behavior in Indonesia.

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